

92  
- Now referring to Fig. 4 showing the diaper 1 in the sectional view taken along the line IV - IV extending aside toward the rear waist region 7 with respect to the line III - III dividing the diaper 1 into front and rear sections as viewed in the longitudinal direction as indicated in Fig. 2, the absorbent member 3 is formed on the side of the backsheet 37 with a pair of the first grooves 41 (See Fig. 5) concaved toward the topsheet 36 and longitudinally extending toward the front and rear end portions 26, 27. Each of the first grooves 41 preferably has a width of about 2 - 20 mm and a depth corresponding to about 1/4 - 3/4 of the thickness of the core 38, and has its inner side with the backsheet 37. The core 38 is disposed between the backsheet 37 defining the inner side of the respective first grooves 41 and the topsheet 36 opposed to the backsheet 36. The first grooves 41 are intended to maintain, between the absorbent member 3 and the cover member 2, clearances serving to improve permeability of the diaper 1 even when these members 2, 3 are brought into a close contact.

Please replace the first full paragraph on page 10 with the following:

93  
- Referring to Fig. 6 showing the diaper 1 in the sectional view taken along the line VI - VI extending between the front and rear end portions 18, 19 of the cover member 2 as indicated in Fig. 2, each of the first grooves 41 is laid separated respectively in the crotch region 8 in the longitudinal direction by an appropriate spacing. If necessary, it is also possible to make all of the first grooves 41 connected entirely, rather than laying separately the respective first grooves 41 in the longitudinal direction. It should be understood here that, while the leak-barrier cuffs 31 are normally folded down onto the topsheet 36, these leak-barrier cuffs 31 are illustrated in Fig. 6 as being somewhat rising in order that the presence of these leak-barrier cuffs 31 can be apparently recognized.

Please replace the last paragraph beginning on page 10 and continuing on page 11 with the following:

a4  
- While the diaper 1 of such a structure is worn, the cover member 2 and the absorbent member 3 are maintained to be spaced from each other along the first grooves 41 even when these members 2, 3 are brought into a close contact with each other and thereby air permeability between the interior and the exterior of the absorbent member 3 can be improved. For example, an air permeable and liquid-impervious sheet may be used as a stock material for the backsheet 37 of the absorbent member 3 to ensure that a flow of air high in temperature and humidity can be guided from the interior of the core 38 through the backsheet 37 into the first grooves 41 and freely moved therein without being hindered the cover member 2. With the inner and outer sheets 16, 17 of the cover member 2 being air permeable, a flow of air high in temperature and humidity introduced into the first grooves 41 can be exhausted therefrom into the exterior of the diaper 1.

Please replace the first full paragraph on page 11 with the following:

a5  
- Fig. 7 is a view similar to Fig. 4 but showing another embodiment of this invention. The absorbent member 3 of this diaper 1 is formed with, in addition to the first grooves 41 extending in the longitudinal direction, a pair of second grooves 46 extending in the transverse direction, i.e., orthogonally to the first grooves 41, between the transversely opposite side edge portions 29 of the absorbent member 3. These second grooves 46 facilitate the flow of air high in temperature and humidity to be exhausted from the first grooves 41 and thereby the air permeability of the absorbent member 3 is further improved. Preferably, one or more pieces of the second grooves 46 with substantially the same dimension as the first grooves 41 in width and depth may be installed against one piece of the first grooves 41.

Please replace the last paragraph beginning on page 11, continuing on page 12 and ending on page 13 with the following:

a6  
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- Fig. 8 is a view similar to Fig. 2 but showing still another embodiment of this invention, Fig. 9 is a sectional view taken along a line IX - IX in Fig. 2 and Fig. 10 is an enlarged sectional view showing a part of Fig. 9. The diaper 1 shown in Figs. 8 - 10 has, in addition to the first grooves 41 or both the first and second grooves 41, 46 formed on the side of the backsheet 36, third grooves 47 formed on the side of the topsheet 36 so as to extend in the longitudinal direction. Preferably, the absorbent member 3 is formed on the side of the topsheet 36 with at least one portion of the third grooves 47 having an appropriate length and more preferably with at least two portions of the third grooves 47 each being spaced in the longitudinal direction in the crotch region 8 of the cover member 2. Referring to Fig. 8, the absorbent member 3 is formed along each of its transversely opposite side edge portions 29 with a pair of the third grooves 47 spaced from each other in the longitudinal direction. Taking account of the fact that the presence of the third grooves 47 tends to, in the same manner as the first grooves 41 in the embodiment shown by Fig. 4, restrain the absorbent member 3 from being easily curved between the front and rear end portions 26, 27, it is preferred to separate each of the third grooves 47 in the crotch region 8 so that the absorbent member 3 may be easily curved and thereby facilitated to fit to the wearer's crotch region. Each of the third grooves 47 preferably has a width of about 2 - 20 mm and a depth corresponding to about 1/4 - 3/4 of the thickness of the core 38. The third grooves 47 formed in this manner can reduce an amount of body fluids permeated sideways and prevent body fluids from leaking sideways of the diaper 1 by introducing body fluids such as urine to be guided thereinto.

Please replace the paragraph beginning on page 13 and continuing on page 14 with the following:

a7

- As is apparent from Fig. 10 showing the diaper 1 in the enlarged sectional view, the position of the third grooves 47 substantially conforms to the position of the first grooves 41 as viewed in the transverse direction of the diaper 1. With the first and third grooves 41, 47 formed on the side of the backsheet 37 and the side of the topsheet 36, respectively, in such an alignment, the absorbent member 3 is curved as indicated by imaginary lines and facilitated to follow a contour of the wearer's waist as the diaper 1 is worn. The first grooves 41 are deformed with their widths are widened and the third grooves 47 are deformed with their widths are narrowed as the absorbent member 3 follows the contour of the wearer's waist in the waist-surrounding direction. Such deformation of the grooves 41, 47 advantageously facilitates the absorbent member 3 to follow the contour of the wearer's waist without formation of wrinkles on the side of the topsheet 36 even if the core 38 has a thickness of about 10 - 20 mm. Therefore, there is no anxiety that the presence of the topsheet 36 might give the wearer an uncomfortable feeling. In this way, the first grooves 41 serving to improve the air permeability of the absorbent member 3 are preferably positioned to that of the third grooves 47 so that the fitness of the absorbent member 3 around the wearer's waist also may be improved. More specifically, with the arrangement that the first grooves 41 and the third grooves 47 are positioned on the same position as illustrated in Fig. 10, it is preferred to dispose the core 38 between the first and third grooves 41, 47 so that the body fluids can be dispersed in the absorbent member 3 in the transverse direction through the core 38.

Please replace the paragraph beginning on page 14 and continuing on page 15 with the following:

a8

- While this invention has been described hereinabove with respect to the pants-type disposable diaper as the typical embodiment thereof, this invention is applicable also to an open-type disposable diaper. The cover member 2 may be formed from a nonwoven fabric or plastic

98 cont.  
film. The core 38 of the absorbent member 3 may be formed from fluff pulp fibers 61 and superabsorbent polymer particles 62. The superabsorbent polymer particles 62 may be mixed with the fluff pulp fibers 61 and this mixture may be layered in the thickness direction of the core 38. The superabsorbent polymer particles 62 may be distributed with its density gradually increasing in the direction from the topsheet 36 toward the backsheet 37. The distribution density of the superabsorbent polymer particles 62 may be varied in the transverse direction of the absorbent member 3. For example, referring to Fig. 8, the distribution density of the superabsorbent polymer particles 62 may be adjusted to be higher in the zone defined between a pair of the third grooves 47, 47 than in the zones extending outside the pair of the third grooves 47, 47. In any case, an amount of the superabsorbent polymer particles 62 used to form the core 38 is preferably about 2 - 98 % by weight of the core 38. Thermoplastic synthetic fiber having a melting point of  $100 \pm 20^{\circ}\text{C}$  may be mixed into the core material up to 20 % by weight to facilitate formation of the first - third grooves 41, 46, 47 by heating the core 38 under a pressure.

Please replace the first full paragraph on page 15 with the following:

99  
- The disposable diaper according to this invention has the first grooves and the second grooves formed on the side of the backsheet of the absorbent member which is attached to the inner side of the cover member. The grooves contribute to improvement of air permeability of the absorbent member itself as well as to the air permeability desired between this absorbent member and the cover member so that no stuffiness may occur even when the absorbent member is closely contacted with the wearer's skin.